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89th Annual Meeting, 2005. Program

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Arkansas Academy of Science

PROGRAM

Arkansas Academy of Science

89th Annual Meeting

April 8-9, 2005

Hendrix College

SCHEDULE OF EVENTS

Friday morning

- 10:00 a.m.-4:00 p.m. Registration. West Lobby of DW Reynolds.
- 10:00 a.m.-11:30 a.m. Academy executive meeting. DW Reynolds 130.
- 10:00 a.m. Poster setup. DW Reynolds Rooms 011 and 012.
- 11:30 a.m.-12:30 p.m. Annual meeting of the advisors and directions of the Ouachita Mountains Biological Station. DW Reynolds 137.

Friday afternoon

- 12:15 p.m. Judges Meeting. DW Reynolds Room 206/208.
- 1:00 p.m. - 2:45 p.m. Oral presentations. See program for locations.
- 2:45 p.m.-3:15 p.m. Coffee break/Posters. DW Reynolds Rooms 011 and 012.
- 3:15 p.m.-5:00 p.m. Oral presentations resume. See program for locations.
- 5:00 p.m.-6:00 p.m. First business meeting. DW Reynolds Room 010.
- 6:00 p.m.-7:00 p.m. Keynote speech. Trieschman Theatre.
- 7:00 p.m.-9:00 p.m. Mixer and banquet. Cottage on Washington Avenue.

Saturday morning

- 7:30 a.m.-8:00 a.m. Coffee and donuts. DW Reynolds Rooms 011 and 012.
- 8:00 a.m.-9:00 a.m. Registration. West Lobby of DW Reynolds.
- 8:00 a.m.-9:15 a.m. Oral presentations. See program for locations.
- 9:15 a.m.-9:45 a.m. Coffee break/Posters. DW Reynolds 011 and 012.
- 9:45 a.m.-11:00 a.m. Oral presentations resume. See program for locations.
- 11:00 a.m.-12:00 p.m. Poster breakdown.
- 12:00 p.m. Adjourn.

SECTION PROGRAMS

* Undergraduate **Graduate

SCHEDULE OF ORAL PRESENTATION SESSIONS

| | | DW Rey. 008 | DW Rey. 010 | DW Rey. 013 | DW Rey. 137 |
|----------|-----------------|---------------|--------------|--------------|-----------------|
| Friday | Session I | Biochemistry/ | Vertebrate | Invertebrate | Engineering/ |
| | 1:00 - 2:45 pm | Cell Biology | Biology I | Biology I | Computer Sci. I |
| Saturday | Session II | Molecular | Vertebrate | Invertebrate | Environmental |
| | 3:15 - 5:00 pm | Biology | Biology II | Biology II | Sciences I |
| Saturday | Session III | Physics/ | Zoology | Botany I | Engineering/ |
| | 8:00 - 9:15 am | Astronomy | | | Computer Sci.II |
| Saturday | Session IV | Chemistry | Myxomycetes/ | Botany II | Environmental |
| | 9:45 - 11:00 am | | Education | | Sciences II |

ORAL PRESENTATIONS

(Speakers' Underlined)

Session I: Friday April 8, 2005, 1:00 pm - 2:45 pm

Biochemistry/Cell Biology

DW Reynolds Room 008

1:00 pm **SYNTHESIS AND CHARACTERIZATION OF RUTHENIUM COMPLEXES FOR BIOLOGICAL ELECTRON TRANSFER STUDIES.** Anwar A. Bhuiyan¹, Ryan W. Dossey², Bill Durham² and Francis S. Millett², ¹Arkansas Tech University, Russellville, Arkansas 72801, ²University of Arkansas, Fayetteville, Arkansas 72701

1:15 pm **REACTIVITY OF THIAZOLIDINES TOWARDS PEROXY-NITRITE.** Richard B. Walker, Department of Chemistry and Physics, University of Arkansas at Pine Bluff, Pine Bluff, Arkansas 71611 Stephen C. Grace, Department of Biology, University of Arkansas at Little Rock, Little Rock, Arkansas 72204

1:30 pm **THE SUPEROXIDE DISMUTASE-LIKE ACTIVITY OF COPPER (II) 3,5-DIBROMOSALICYLATE.** Johnmesha Sanders¹, Kendra Christian², Grant Wangila¹, and William Willingham¹, ¹Walker Center for Multi-Purpose Research and Sponsored Programs, University of Arkansas at Pine Bluff, Pine Bluff, Arkansas 71601 and ²Pine Bluff High School, Pine Bluff, Arkansas 71601

1:45 pm **TRANSPOSON MUTAGENESIS OF DETERGENT DEGRADING BACTERIA.** Rachel Trana, Holly Strickland and Russell Nordeen, School of Mathematical and Natural Sciences P.O. Box 3480 Monticello, Arkansas 71656

2:00 pm **DECLINE IN PROTEASOMAL CATALYTIC ACTIVITY ACCOUNTS FOR AGE-RELATED DECREASE IN IMMUNE FUNCTION, WHICH IS REVERSIBLE BY PHENOLIC ANTI-OXIDANT 3H¹, 2-DITHIOLE 3-THIONE.** Rupali Das*, Subramaniam Ponnappan ‡ and Usha Ponnappan *‡. *Department of Microbiology and Immunology, ‡Department of Geriatrics, University of Arkansas for Medical Sciences (UAMS), CAVHS, 4300, West 7th Street, Little Rock, Arkansas 72205.

2:15 pm **CD4⁺ T CELL ANERGY IS ASSOCIATED WITH INCREASED LEVELS OF p21^{Cip1} AND DECREASED ACTIVITY OF AP-1 AND NF- κ B.** A. Selma Dagtas, Kathleen Gilbert, Department of Microbiology and Immunology, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205

2:30 pm **NICOTINE AND DEVELOPING AUTONOMIC NEURONS OF MAMMALIAN NERVOUS SYSTEM.** Jonathan Treece, B.M. Prabhu and Malathi Srivatsan, Department of Biological Sciences, Arkansas State University, Jonesboro, Arkansas 72401

Vertebrate Biology I

DW Reynolds Room 010

1:00 pm **SECOND REPORT OF THE SOUTHERN PAINTED TURTLE, *CHRYSEMYS DORSALIS* (TESTUDINES: EMYDIDAE), FROM TEXAS, WITH COMMENTS ON ITS GENETICS.** Jonathan P. Fuller¹, Chris T. McAllister¹, and Michael R. J. Forstner². ¹Department of Biology, Texas A&M University-Texarkana, Texarkana, Texas 75505; ²Department of Biology, Texas State University, San Marcos, Texas 78666.

1:15 pm **CAPTURE PATTERNS AND DISTRIBUTION RECORDS FOR BOTTOMLAND BAT SPECIES IN ARKANSAS' DELTA REGION.** Stephen C. Brandebura, Bobby H. Fokidis, and Thomas S. Risch. Arkansas State University, Department of Biological Sciences, P. O. Box 599, State University, Arkansas 72467

1:30 pm **TROPHIC INTERACTIONS BETWEEN A SPECIES IN DECLINE, THE OZARK HELLBENDER (*CRYPTOBRANCHUS ALLEGANIENSIS BISHOP*), AND A PREY BASE COMPRISED OF MULTIPLE CRAYFISH SPECIES USING STABLE ISOTOPE ANALYSIS.** Waylon R. Hiler¹, Benjamin A. Wheeler¹, Stanley E. Trauth¹, and Alan D. Christian². ¹Department of Biological Sciences, Arkansas State University, P.O. Box 599, State University, Arkansas 72467; ²Environmental Sciences Program, Arkansas State University, P.O. Box 847, State University, Arkansas 72467

1:45 pm **COMPARISON OF ABNORMALITY RATES IN THE OZARK HELLBENDER (*CRYPTOBRANCHUS ALLEGANIENSIS BISHOP*) FROM THE SPRING RIVER, FULTON COUNTY, ARKANSAS.** Waylon R. Hiler¹, Benjamin A. Wheeler¹, and Stanley E. Trauth¹. ¹Department of Biological Sciences, Arkansas State University, P.O. Box 0599, State University, Arkansas 72467-0599; ²Environmental Sciences Program, Arkansas State University, P.O. Box 847, State University, Arkansas 72467

2:00 pm **USE OF THE BIOMARK[®] TAGGING SYSTEM ON THE OZARK HELLBENDER, *CRYPTOBRANCHUS ALLEGANIENSIS BISHOP* (AMPHIBIA: CAUDATA), IN NORTHERN ARKANSAS.** Benjamin A. Wheeler¹, Stanley E. Trauth¹, Waylon R. Hiler¹, and Chris T. McAllister¹. ¹Environmental Sciences Program, Arkansas State University, State University, Arkansas 72467; ²Department of Biological Sciences, Arkansas State University, State University, Arkansas 72467; ³Department of Biology, Texas A&M University-Texarkana, Texarkana, Texas 75505.

2:15 pm **COMPARISON OF THE REACH SCALE HABITAT CHARACTERISTICS OF HISTORIC AND CURRENT OZARK HELLBENDER (*CRYPTOBRANCHUS ALLEGANIENSIS BISHOP*) LOCALITIES USING STANDARDIZED ASSESSMENT PROTO - COOLS.** Benjamin A. Wheeler¹, Waylon R. Hiler², Stan E. Trauth¹, and Alan D. Christian³. ¹Environmental Sciences Program, Arkansas State University. ²Department of Biological Sciences, Arkansas State University

2:30 pm **SEASONAL INCIDENCE OF SPERM WITHIN SPERMATHECAE OF THE OUACHITA DUSKY SALAMANDER (*DESMOGNATHUS BRIMLEYORUM*) IN ARKANSAS.** Stanley E. Trauth and Michelle N. Mary, Department of Biological Sciences, Arkansas State University, P.O. Box 599, State University, Arkansas 72467-0599

Invertebrate Biology I

DW Reynolds Room 013

1:00 pm **A PRELIMINARY REPORT ON INSECTS INHABITING POCKET GOPHER BURROW IN ARKANSAS.** Peter W. Kovarik. 239 Crestview Road, Columbus, Ohio 43202. Stephen W. Chordas III. The Ohio State University, 1063 West 2nd Avenue, Columbus Ohio 43212. Eric G. Chapman. Department of Biological Sciences, Kent State University, Kent, Ohio 44242. Gary A. Heidt. Department of Biology University of Arkansas at Little Rock 2801 S. University Little Rock, Arkansas 72204. Henry W. Robison. Department of Biology, Southern Arkansas University, P. O. Box 9354, Magnolia, Arkansas 71754-9354.

1:15 pm **FIFTY-FIVE NEW ADDITIONS TO THE TRUE BUG (HEMIPTERA) FAUNA OF ARKANSAS.** Stephen W. Chordas III. The Ohio State University, 1063 West 2nd Avenue, Columbus Ohio 43212. Henry W. Robison. Department of Biology, Southern Arkansas University, P. O. Box 9354, Magnolia, Arkansas 71754-9354. Eric G. Chapman. Department of Biological Sciences, Kent State University, Kent, Ohio 44242. Betty G. Crump. Forest Service, P.O. Box 1270, Hot Springs, Arkansas 71902. Peter W. Kovarik. 239 Crestview Road, Columbus, Ohio 43202.

1:30 pm **CHECKLIST OF SUBTERRANEAN AMPHIPODA OF ARKANSAS.** G.O. Graening, Michael E. Slay, and John R. Holsinger. Arkansas Field Office, The Nature Conservancy, 601 North University Avenue, Little Rock, Arkansas 72205 and Department of Biological Sciences, Old Dominion University, Norfolk, Virginia 23529.

1:45 pm **HEPATOZOON INFECTIONS IN ARKANSAS SNAKES.** James J. Daly Sr., Charles H. Calhoun, Robert C. McDaniel and James W. Townsend, Departments of Microbiology and Immunology, and Pathology, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205.

2:00 pm **AQUATIC MACROINVERTEBRATES ASSOCIATED WITH *OPHIOGOMPHUS WESTFALLI* (ODONATA: GOMPHIDAE) IN MISSOURI OZARK STREAMS.** George L. Harp, Phoebe A. Harp and Sam McCord. Dept. of Biological Sciences, Arkansas State University, State University, Arkansas 72467.

2:15 pm **INCREASED HABITAT HETEROGENITY: EFFECTS ON MACROINVERTEBRATE BIOMASS AND DISTRIBUTION PATTERNS IN A SHALLOW EUTROPHIC RESERVOIR.** Joseph M. Shostell and Bradley S. Williams. Biology Department, Penn State University, Uniontown, Pennsylvania 15401-0519, USA. Biology Department, University of Central Arkansas, Conway, Arkansas 72035-5003, USA.

Engineering/Computer Sci. I

DW Reynolds Room 137

1:00 pm **PHOTOVOLTAIC AND PHOTOCONDUCTIVE PROPERTIES OF DOUBLE LAYER SEMICONDUCTOR / POLYMER COMPOSITE FILMS.** David Harlan, Robert Engelken, and Matthew LeMay. Optoelectronic Materials Research Laboratory, College of Engineering, Arkansas State University, P.O. Box 1740, State University, Arkansas 72467.

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1:15 pm **DEPOSITION AND CHARACTERIZATION OF MULTI-FUNCTIONAL FERROMAGNETIC/OPTOELECTRONIC COMPOSITE FILMS.** Matthew LeMay, Robert Engelken, and David Harlan. Optoelectronic Materials Research Laboratory, College of Engineering, Arkansas State University, P.O. Box 1740, State University, Arkansas 72467.

1:30 pm **A NEW CITRATE-BASED SOLUTION FOR CHEMICAL BATH DEPOSITION OF NONHAZARDOUS BISMUTH (III) SULFIDE FILMS.** Demetrick Warren, Robert Engelken, David Harlan, and Matthew LeMay. Optoelectronic Materials Research Laboratory, College of Engineering, Arkansas State University, P.O. Box 1740, State University, Arkansas 72467.

1:45 pm **GROWTH RATE CALCULATIONS FOR ELECTRONIC DEVICE PRODUCTION.** Willie Nelson, Alvin Ong, and Daniel Bullock*, Department of Physical Science, Arkansas Tech University, Russellville, Arkansas 72801. *CONTACT PERSON

2:00 pm **A SURVEY ON THE VERTEX COVER PROBLEM.** A. G. Dhakne B. D. Freeman C. Graves. Department of Computer Science, Arkansas State University, P.O. Box 9, State University, Arkansas 72467.

2:15 pm **THEORY AND PRACTICALITY OF A SOLAR/ELECTRIC CAR.** Christopher Fisher, M. Hemmati, Dwayne Ahrens, and Don White. Department of Physical Sciences, Arkansas Tech University, Russellville, Arkansas 72801

Session II: Friday April 8, 2005, 3:15 pm – 5:00 pm

Molecular Biology

DW Reynolds Room 008

3:15 pm **DEVELOPMENT OF A RECOMBINANT VARICELLA VACCINE THAT EXPRESSES SIMIAN IMMUNODEFICIENCY VIRUS ANTIGENS.** Yang Ou, and Wayne L. Gray. Dept. of Microbiology and Immunology, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205

3:30 pm **CONSTRUCTION OF RECOMBINANT VARICELLA VACCINES EXPRESSING RESPIRATORY SYNCYTIAL VIRUS ANTIGENS.** Toby M. Ward, Kara A. Davis, Wayne L. Gray.

3:45 pm **MULTIPLE FUNCTIONAL DOMAINS OF MEIOTIC REGULAR PROTEIN ATF1 IN FISSION YEAST *S. POMBE*.** Jun Gao, Mari K. Davidson, Gloria Glick, and Wayne P. Wahls. Department of Biochemistry and Molecular Biology, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205, U.S.A.

4:00 pm **ADE6-M26 mRNA ACTIVATES MEIOTIC RECOMBINATION AT THE ADE6 GENE OF *S. POMBE*.** Jacy L. Wagnon, Mari K. Davidson, and Wayne P. Wahls. Department of Biochemistry and Molecular Biology, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205

4:15 pm **ZIP1 PROTEIN BINDS TO THE M26 DNA SITE TO MEDIATE HIGH COPY SUPPRESSION OF *ATF1* NULL MUTANT PHENOTYPES.** Harish K. Shandilya, Mari K. Davidson & Wayne P. Wahls. Department of Biochemistry & Molecular Biology, Slot#516 University of Arkansas for Medical sciences, Little Rock, Arkansas 72211.

4:30 pm **EVIDENCE THAT THE DISTRIBUTION OF THE ELONGATION FACTOR SPT16 OVER TRANSCRIBED GENES IS DEPENDENT UPON HISTONE H3 INTEGRITY IN YEAST.** Andrea A. Duina¹, and Fred Winston². ¹Hendrix College, Biology Department, Conway, Arkansas 72032. ²Harvard Medical School, Department of Genetics, Boston, Massachusetts 02115

4:45 pm **A TANDEM AFFINTY PURIFICATION APPROACH TO IDENTIFY RECOMBINATION PROTEIN COMPLEXES.** K. Mark DeWall and Wayne P. Wahls. Department of Biochemistry and Molecular Biology, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205

Vertebrate Biology II

DW Reynolds Room 010

3:15 pm **SURVEY OF SMALL MAMMALS IN ARKANSAS VIA DISSECTION OF BARN OWL (*TYTO ALBA*) PELLETS.** Ewing, L. E., S. R. Thomas and G. A. Heidt. Department of Biology, University of Arkansas at Little Rock, Little Rock, Arkansas 72204

3:30 pm **DO SNAKE SKINS DETER PREDATION OF GREAT CRESTED FLYCATCHER NESTS: AN ARTIFICIAL NEST EXPERIMENT.** Elizabeth C. Compton, and Thomas S. Risch. Department of Biological Sciences, Arkansas State University, 117 S Caraway, State University, Arkansas 72467

3:45 pm **POSTHATCHING YOLK RESERVES: THE EFFECT OF STARVATION ON EARLY GROWTH OF *APALONE MUTICA* HATCHLINGS.** Trixie Lee, Michael V. Plummer, and Nathan E. Mills. Department of Biology, Box 12251, Harding University, Searcy, Arkansas 72149 USA

4:00 pm **BREEDING RESPONSE OF INDIGO BUNTINGS (*PASSERINA CYANEA*) TO OAK-WOODLAND RESTORATION IN THE OZARK NATIONAL FOREST.** Nicholas J.C. Brown and Christopher Kellner, Arkansas Tech University, Russellville, Arkansas 72801

4:15 pm **A SONGBIRD INVENTORY OF ARKANSAS POST NATIONAL MEMORIAL.** Philip A. Tappe, School of Forest Resources, Arkansas Forest Resources Center, University of Arkansas, Monticello, Arkansas 71656

4:30 pm **THE DECLINE OF NATURAL HISTORY STUDY IN HERPETOLOGY: AN ANALYSIS OF HISTORICAL PUBLICATION PATTERNS IN TWO JOURNALS.** McCallum, M.L. and J.L. McCallum. Department of Biology, Louisiana State University in Shreveport, Shreveport, Louisiana 71115.

4:45 pm **POPULATION RESPONSE TO HARVEST OF WHITE-TAILED DEER ON CHOCTAW ISLAND WILDLIFE MANAGEMENT AREA.** Robert E. Kissell, Jr., School of Forest Resources, Arkansas Forest Resources Center, University of Arkansas, Monticello, AR 71656. Philip A. Tappe, School of Forest Resources, Arkansas Forest Resources Center, University of Arkansas, Monticello, Arkansas 71656

Invertebrate Biology II

DW Reynolds Room 013

3:15 pm **SCANNING ELECTRON MICROSCOPY OF THE GONOPODS OF THE MILLIPED, *THRINAXORIA LAMPRA* (CHAMBERLIN) (POLYDESMIDA: XYSTODESMIDAE).** Chris T. McAllister¹, Rowland M. Shelley², and Stanley E. Trauth³. ¹Department of Biology, Texas A&M University-Texarkana, Texarkana, TX 75505; ²Research Lab, North Carolina State Museum of Natural Sciences, Raleigh, North Carolina 27607; and ³Department of Biological Sciences, Arkansas State University, State University, Arkansas 72467.

3:30 pm **SECOND RECORD OF THE DIPLURAN, *OCCASJAPYX CARLTONI* ALLEN, 1988 (INSECTA: JAPYGIDAE), FROM ARKANSAS.** Chris T. McAllister¹ and Christopher Carlton². ¹Department of Biology, Texas A&M University-Texarkana, Texarkana, TX 75505; and ²Louisiana State Arthropod Museum, Louisiana State University, Baton Rouge, Louisiana 70803.

3:45 pm **DISTRIBUTION OF TARANTULAS (*APHONOPELMA*) IN ARKANSAS: RESULTS OF A CITIZEN-SCIENCE SURVEY.** Michael D. Warriner, Arkansas Natural Heritage Commission, 1500 Tower Building, 323 Center Street, Little Rock, Arkansas 72201

4:00 pm **PHYLOGEOGRAPHY OF THE STRIPED SCORPION, *CENTRUROIDES VITTATUS*, IN THE SOUTHWESTERN UNITED STATES.** Tsunemi Yamashita, Maria Longing, and Nick Pridgin, Department of Biological Sciences, Arkansas Tech University, Russellville, Arkansas 72801

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Environmental Sciences I

DW Reynolds Room 137

- 3:15 pm **ALTERNATE PARADIGMS FOR FOREST AND FOREST PRODUCT UTILIZATION.** Jason Self*, Dr. Robert Engelken*, **, David Harlan**, Matthew LeMay**. Environmental Science Ph.D. Program* and College of Engineering**, Arkansas State University, P.O. Box 1740, State University, Arkansas 72467
- 3:30 pm **THE EFFECT OF INDIGENOUS VILLAGES ON CORAL REEF COMMUNITY STRUCTURE IN KUNA YALA, PANAMA.** Michelle R. Dare, Elizabeth F. Pope and James A. Engman. Department of Biology, Henderson State University, Box 7520, Arkadelphia, Arkansas 71999-0001.
- 3:45 pm **FRESHWATER SPONGE COMMUNITY COMPOSITION AND CHARACTERISTICS OF OCCURRENCE ON *EGERIA Densa* IN DEGRAY LAKE, ARKANSAS, AND A REPORT OF SPONGE OCCURRENCE IN LAKE OUACHITA, ARKANSAS.** Thomas P. Saul, Michelle R. Dare and James A. Engman. Department of Biology, Henderson State University, Box 7520, Arkadelphia, Arkansas 71999-0001.
- 4:00 pm **QUANTIFICATION OF STREAM DRYNESS IN INTERIOR HIGHLAND STREAMS.** Justin M. Homan, Nicholas M. Gironde, and Charles J. Gagen. Arkansas Tech University, Fisheries and Wildlife Biology Program, 1701 N. Boulder Ave., Russellville, Arkansas 72081
- 4:15 pm **EFFECTS OF HERBICIDE APPLICATION ON FOLIAR MORPHOLOGY AND NUTRIENT CONCENTRATIONS IN MID-ROTATION PINE PLANTATIONS.** Prabudhda Dahal and Hal O. Liechty, Program Technician and Associate Professor, respectively; School of Forest Resources, P.O. Box 3468, Monticello, Arkansas 71656.
- 4:30 pm **A CATALOG OF ALTERNATIVE CONCEPTIONS OF THE TSUNAMI OF 26 DECEMBER 2004.** Stephen K. Boss, Department of Geosciences, 113 Ozark Hall, University of Arkansas, Fayetteville, AR 72701 e-mail: sboss@uark.edu. Caroline Beller, School of Teaching & Curriculum Leadership, 227 Willard Hall, Oklahoma State University, Stillwater, Oklahoma 74078 e-mail: beller@okstate.edu.
- 4:45 pm **INTEGRATING SUPERVISED AND UNSUPERVISED CLASSIFICATION METHODS TO DEVELOP A MORE ACCURATE LAND COVER CLASSIFICATION.** Donald L. M. Enderle and Robert C. Weih, Jr., Spatial Analysis Laboratory (SAL), University of Arkansas at Monticello, Arkansas Forest Resources Center, School of Forest Resources, 110 University Court, Monticello, Arkansas 71656, Email: weih@uamont.edu, Phone: 870-460-1248, Fax: 870-460-1092

Session III: Saturday April 9, 2005, 8:00 am – 9:15 am

Physics/Astronomy

DW Reynolds Room 010

- 8:00 am **A PURE DIPOLE MODEL FOR SPHERICAL RARE EARTH MAGNETS.** Alois J. Adams, Department of Physics and Astronomy, University of Arkansas at Little Rock, 2801 South University Avenue, Little Rock, Arkansas 72204-1099
- 8:15 am **SERENDIPITOUSLY DISCOVERED ECLIPSING-NEAR CONTACT BINARY HH95-79 IN AURIGA.** Scott Austin, University of Central Arkansas, Department of Physics and Astronomy, Conway, Arkansas 72035. Jeff Robertson, Arkansas Tech University, Department of Physical Sciences, Russellville, AR 72801. Tut Campbell, Whispering Pines Observatory, 7021 Whispering Pines Road, Harrison, Arkansas 76201
- 8:30 am **NEWLY DISCOVERED PULSATING VARIABLE IN ANDROMEDA.** Jeff W. Robertson. Arkansas Tech University, Department of Physical Sciences, 1701 North Boulder, Russellville, Arkansas 72801-2222
- 8:45 am **UU AQR ECLIPSES DURING 2003.** Jeff W. Robertson, Josh A. Higgins, R. Tut Campbell. Arkansas Tech University, Department of Physical Sciences, 1701 North Boulder, Russellville, Arkansas 72801-2222

- 9:00 am **ASTROPHYSICAL APPLICATIONS OF THE NUCLEAR EQUATION OF STATE.** Hunter Broadway and Bao-An Li. Department of Chemistry and Physics, Arkansas State University, State University, Arkansas 72467

Zoology

DW Reynolds Room 010

- 8:00 am **IDENTIFICATION OF CYSTACANTHS OF THE FAMILY OLIGACANTHORHYNCHIDAE (ACANTHOCEPHALA) BASED ON PROBOSCIS AND HOOK MORPHOMETRICS.** Dennis J. Richardson, Quinnipiac University, Box 71, 275 Mount Carmel Avenue, Hamden, Connecticut 06518
- 8:15 am **DISTRIBUTION AND STATUS OF *FALLICAMBARUS GILPINI* HOBBS AND ROBISON, AN ARKANSAS ENDEMIC CRAYFISH.** Henry W. Robison, Southern Arkansas University, P. O. Box 9354 SAU, Magnolia, Arkansas 71754-9354 and Brian Wagner, Arkansas Game and Fish Commission, 915 East Sevier St., Benton, Arkansas 72015
- 8:30 am **DISTRIBUTION AND STATUS OF THE KIAMICHI SHINER, *NOTROPIS ORTENBURGERI* HUBBS, IN ARKANSAS AND OKLAHOMA.** Henry W. Robison, Southern Arkansas University, P.O. Box 9354 SAU, Magnolia, Arkansas 71754-9354
- 8:45 am **A SURVEY OF THE FISHES OF THE PINE BLUFF ARSENAL, ARKANSAS.** Henry W. Robison, Southern Arkansas University, P.O. Box 9354 9354 SAU, Magnolia, Arkansas 71754-9354
- 9:00 am **SMALL FISH SPECIES OF ARKANSAS RESERVOIRS.** Thomas M. Buchanan, Department of Biology, University of Arkansas-Fort Smith, Fort Smith, Arkansas 72913.

Botany I

DW Reynolds Room 013

- 8:00 am **SPECIFIC GRAVITY TRENDS IN THE LOWER PORTION OF LOBLOLLY PINE (*PINUS TAEDA* L.) PULPWOOD TREES IN SOUTHERN ARKANSAS.** Matthew B. Hurd, David W. Patterson, and Paul F. Doruska. University of Arkansas School of Forest Resources; Arkansas Forest Resources Center, PO Box 3468, Monticello, Arkansas 71656
- 8:15 am **GROWING SPACE AND FERTILIZATION IMPACTS ON STEM FORM OF JUVENILE LOBLOLLY PINE.** Jonathan L. Hartley, Paul F. Doruska, and Matthew B. Hurd. University of Arkansas-Monticello School of Forest Resources; Arkansas Forest Resources Center, PO Box 3468, Monticello, Arkansas 71656
- 8:30 am **LOBLOLLY PINE BIOMASS COROLLARIES OF SOIL ORGANIC CARBON CONTENT.** Robert L. Ficklin, Assistant Professor of Forest Soils and Ecophysiology, Arkansas Forest Resources Center, 203 Forest Resources Bldg.- UAM, Monticello, Arkansas 71656
- 8:45 am **INDIVIDUAL-TREE, GREEN STEM BIOMASS EQUATIONS FOR LOBLOLLY PINE PULPWOOD.** Paul F. Doruska and David W. Patterson. University of Arkansas School of Forest Resources; Arkansas Forest Resources Center, PO Box 3468, Monticello, Arkansas 71656
- 9:00 am **PRESETTLEMENT *PINUS TAEDA* IN THE MISSISSIPPI VALLEY ALLUVIAL PLAIN OF THE MONROE COUNTY, ARKANSAS AREA.** Don C. Bragg, USDA Forest Service, Southern Research Station, P.O. Box 3516 UAM, Monticello, Arkansas 71656

Engineering/Computer Sci. II

DW Reynolds Room 137

- 8:00 am **MODELING OF A 4-PHASE 8/6 SWITCHED RELUCTANCE MACHINE OPERATING UNDER MULTI-PHASE EXCITATION BY UTILIZING ARTIFICIAL NEURAL NETWORKS.** Alex Skorc, Student Researcher, 3609 Browning Cove, Jonesboro, Arkansas 72404. Chris S. Edrington, Mentor, LSW 239, College of Engineering, State University, Arkansas 72467

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8:15 am **REDUCED PARTS CONVERTER FOR REALIZATION OF BIPOLAR EXCITATION FOR A 4-PHASE 8/6 SWITCHED RELUCTANCE MACHINE.** Billy Yancey III-Student Researcher, Dr. Chris S. Edrington-Mentor

8:30 am **EFFICIENCY OF TRANSMIT BEAMFORMING WITH CLOSED-LOOP BEAM CONTROL IN MOBILE WIRELESS SYSTEMS.** Brian Sepko and Wookwon Lee. Department of Electrical Engineering, University of Arkansas, 3217 Bell Engineering Center, Fayetteville, Arkansas 72701. Email: [bsepko, wookwon]@uark.edu

8:45 am **CHARACTERISTICS AND ESTIMATION OF DIRECTION-OF-ARRIVALS (DOAs) AND DIRECTION-OF-TRANSMISSION (DOTs) IN WIRELESS COMMUNICATION SYSTEMS.** Omar M. Sabbarini and Wookwon Lee. Department of Electrical Engineering, University of Arkansas, Fayetteville, Arkansas 72701. Email: [osabbar, wookwon]@uark.edu.

9:00 am **SYNCHRONIZATION AND EQUALIZATION IN MATCHED FILTER AND DFT BASED OFDM SYSTEMS.** Christopher S. Curry and Wookwon Lee. Department of Electrical Engineering, University of Arkansas, Fayetteville, Arkansas 72701. E-mail: [cscurry, wookwon]@uark.edu

Session IV: Saturday April 9, 2005, 9:45 am – 11:00 am

Chemistry DW Reynolds Room 008

9:45 am **DENSITY FUNCTIONAL STUDIES OF THE STRUCTURE AND BONDING OF NITROSYL METALLOPORPHYRIN COMPLEXES.** John P. Graham and Robby Davis, Department of Physical Science, Arkansas Tech University, Russellville, Arkansas 72801

10:00 am **CALCULATED DIFFERENCES IN THE SOLVATION OF CHIRAL SOLUTES IN CHIRAL SOLVENTS.** Patrick McLaurin, Anthony K. Grafton, and R. David Pace. Division of Science, Lyon College, PO Box 2317, Batesville, Arkansas 72501

10:15 am **GROUND STATE PREDICTION OF LINKAGE ISOMERISM OF TRANSITION METAL COMPLEXES USING QUANTUM MECHANICS.** Abul B. Kazi, Department of Chemistry and Physics, University of Arkansas at Pine Bluff, 1200 North University Drive, Pine Bluff, Arkansas 71601.

10:30 am **KINETIC STUDIES OF TRIS(2,2'-BIPYRIDINE)IRON(III) PERCHLORATE WITH COBALOXIME, [Co(dmgBF₂)₂(H₂O)₂].** Grant W. Wangila¹ and Robert B. Jordan². ¹Department of Chemistry and Physics, University of Arkansas at Pine Bluff, 1200 North University Drive, Mail Slot 4941, Pine Bluff, Arkansas, 71601 USA. ²University of Alberta, Chemistry Department, Edmonton, Alberta, CANADA; T6G 2G2

10:45 am **SYNTHESIS, CHARACTERIZATION AND BIOLOGICAL ACTIVITY OF ORGANOMETALLIC RUTHENIUM COMPLEXES.** Floyd A. Beckford, Danielle Rinke and Valbona Bashari. Science Division, Lyon College, Batesville, Arkansas 72501

Myxomycetes/Education DW Reynolds Room 010

9:45 am **MYXOMYCETES OF MISSISSIPPI.** Katherine Winsett, Department of Biological Sciences, University of Arkansas, Fayetteville, Arkansas 72701

10:00 am **MOLECULAR STUDIES OF MYCETOZOANS.** Satyendra N. Rajguru, Steven L. Stephenson and Jeffrey Silberman, Department of Biological Sciences, University of Arkansas, Fayetteville, AR 72701, Jean-Marc Moncalvo and Simona Margaritescu, Center for Biodiversity and Conservation Biology, Department of Natural History, Royal Ontario Museum, Toronto, ON Canada M5S 2C6

10:15 am **MYXOMYCETES IN THE CLASSROOM.** Rodney K. Nelson, Department of Biology, University of Arkansas-Fort Smith, Fort Smith, Arkansas 72913 and Steven L. Stephenson, Department of Biological Sciences, University of Arkansas, Fayetteville, Arkansas 72703

10:30 am **BRIDGING THE GAP: BRINGING MOLECULAR DYNAMICS CALCULATIONS TO UNDERGRADUATES USING A POWERFUL, WEB-BASED INTERFACE.** Anthony K. Grafton. Division of Science, Lyon College, PO Box 2317, Batesville, Arkansas 72501

10:45 am **USING MOUSETRAP VEHICLES TO FOSTER STUDENT LEARNING IN PHYSICS.** Wilson J. Gonzalez-Espada, Assistant Professor of Physical Science, Arkansas Tech University, 1701 North Boulder Avenue, Russellville Arkansas 72801, (479) 968-0248, wilson.gonzalezespada@mail.atu.edu. Ed Roberts, Physics Teacher, Pottsville High School, 500 Apache Drive, Pottsville Arkansas 72858, (479) 968-6334, ed.roberts@pottsville.k12.ar.us.

Botany II DW Reynolds Room 013

9:45 am **PLANTS NEW TO THE ARKANSAS FLORA.** Johnathan Fuell and Brett E. Serviss. Department of Biology, Henderson State University, Arkadelphia, Arkansas 71999-0001.

10:00 am **NATURALIZATION AND EXTINCTION OF WATER HYACINTH (*EICHHORNIA CRASSIPES*) (PONTEDERIACEAE) IN SOUTH- WESTERN ARKANSAS.** Renn Tumlinson and Brett Serviss, Department of Biology, Henderson State University, Arkadelphia, Arkansas 71999

10:15 am **CROWN RADIUS/DIAMETER AT BREAST HEIGHT RELATIONSHIPS FOR SIX BOTTOMLAND HARDWOOD TREE SPECIES.** Brian Roy Lockhart, U.S. Forest Service Southern Research Station, Center for Bottomland Hardwoods Research, P.O. Box 227, Stoneville, Mississippi; Robert C. Weih, Jr., School of Forest Resources, University of Arkansas, 110 University Court, Monticello, Arkansas 71656; and Keith Smith, 801 McHenry Street, Jacksonville, Arkansas 72076-6000

10:30 am **AN INVESTIGATION OF THE DIFFERENCES BETWEEN INDUSTRIAL AND NON-INDUSTRIAL PRIVATE TIMBER SALES IN ARKANSAS.** Sayed R. Mehmood and Prabudha Dahal, Assistant Professor and Research Technician, respectively; School of Forest Resources, P.O. Box 3468, Monticello, Arkansas 71656

Environmental Sciences II DW Reynolds Room 137

9:45 am **DEER-VEHICLE COLLISIONS IN ARKANSAS.** Philip A. Tappe, School of Forest Resources, Arkansas Forest Resources Center, University of Arkansas, Monticello, Arkansas 71656

10:00 am **PESTICIDE RESIDUES IN GUANO OF GRAY BATS IN ARKANSAS.** D. Blake Sasse. Arkansas Game and Fish Commission, #2 Natural Resources Drive, Little Rock, Arkansas 72205.

10:15 am **THE EFFECT OF PARAQUAT ON THE ANTIOXIDANT DEFENSE SYSTEM IN THE AMERICAN BULLFROG (*RANA CATESBEIANA*).** McCallum, M.L., L. Jones, D.R. Gossett, and S.W. Banks. Department of Biology, Louisiana State University in Shreveport, Shreveport, Louisiana 71115.

10:30 am **A COMPARISON OF HERPETOFAUNA COMMUNITIES IN THREE NORTHWESTERN LOUISIANA WILDLIFE MANAGEMENT AREAS.** Malcolm L. McCallum, Eric Walsh, Steven Gabry, Vic Bogosian, Jamie L. McCallum

10:45 am **USE OF AN URBAN WETLAND BY WATERBIRDS: A BASELINE STUDY FOR A LONG-TERM ECOLOGICAL MONITORING SITE.** J. L. McCallum and M. L. McCallum. Department of Biology, Louisiana State University in Shreveport, Shreveport, Louisiana 71115.

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Poster Presentation Abstracts

- Poster 1** **1-BUTYL-3-METHYL IMIDAZOLIUM PERBROMIDE BROMINATION OF KETONES**
Timothy Akin and R. David Pace. Lyon College, P.O. Box 2317, Batesville, Arkansas 72501
- Poster 2** **SOIL EROSION AND SEDIMENT LOSS FROM COTTON FIELDS USING CONSERVATION AND CONVENTIONAL TILLAGE METHODS.**
C.K. Bryant¹, J.S. McConnell¹, and M. Mozaffari². ¹University of Arkansas-Southeast Research and Extension Center, Box 3508, Monticello, Arkansas 71656. ²University of Arkansas-Soil Testing Laboratory, Drawer 767, Marianna, Arkansas 72360
- Poster 3** **SPATIAL DISTRIBUTIONS OF ARKANSAS' ACRES FOR WILDLIFE PARTICIPANTS AND ENROLLED LANDS**
Stephanie Bunch and Philip A. Tappe. School of Forest Resources and Arkansas Forest Resources Center, University of Arkansas, Monticello, Arkansas 71656
- Poster 4** **DEVELOPMENT OF AN IMPROVED SMALLPOX VACCINE**
Kara Davis and Wayne L. Gray. Dept. of Microbiology and Immunology, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205.
- Poster 5** **WHO'S YOUR DADDY? USING MICROSATELLITES FOR PATERNITY DETERMINATION IN FRESHWATER MUSSELS.**
M. Jason Gambill, Jeannette Loutsch, Raven Lawson, A. Grace Miller, and Alan D. Christian. Department of Biological Sciences, Arkansas State University, P.O. Box 599, State University, Arkansas, 72467.
- Poster 6** **SYNTHESIS AND EVALUATION OF NEW CATHEPSIN D INHIBITORS**
Adam Green, Carol Trana, Susan E. Hatfield, Matthew McConnell, Ashley Young, Lauren Young, Walter E. Godwin, and Rose McConnell. School of Mathematical & Natural Sciences, University of Arkansas at Monticello, Monticello, Arkansas 71657
- Poster 7** **GENETIC AND BIOCHEMICAL STRATEGIES FOR STUDYING SPT16-HISTONE INTERACTIONS IN YEAST**
Jeffrey Hall¹, Fred Winston², and Andrea A. Duina^{1,2}. ¹Hendrix College, Biology Department, Conway, Arkansas 72032. ²Harvard Medical School, Department of Genetics, Boston, Massachusetts 02115
- Poster 8** **STUDY OF BEAM VIBRATIONS USING EMBEDDED SENSORS AND ITS APPLICATION TO STRUCTURAL HEALTH MONITORING**
Justin Cole, Shakhrukh Ismonov, and Dr. Shivan Haran, Ph.D., Assistant Professor, College of Engineering, Arkansas State University, State University, Arkansas 72467
- Poster 9** **PROTEIN-PROTEIN INTERACTIONS THROUGH SHEET 2-HELIX C LOOP OF P450 REDUCTASE**
Arvind P. Jamakhandi, Sharon A. Ellazar, and Grover P. Miller. University of Arkansas for Medical Sciences, Biochemistry Dept, Little Rock, Arkansas 72205
- Poster 10** **COMPARISON OF HISTORICAL AND CURRENT NESTING HABITAT FOR INTERIOR LEAST TERNS (*STERNA ANTILLARUM ANTHALASSOS*) ON THE ARKANSAS RIVER, ARKANSAS**
Knoll, Erin L., and Thomas Nupp, Biology Department, Arkansas Tech University, Russellville, Arkansas 72801
- Poster 11** **FIRST-YEAR RESULTS: REPRODUCTIVE SUCCESS, PHILOPATRY AND PREDATION OF PRAIRIE WARBLERS, BLUE-WINGED WARBLERS, INDIGO BUNTINGS, AND FIELD SPARROWS IN SCRUB HABITAT IN WESTERN CONNECTICUT**
Christy A. Melhart and Kimberly G. Smith. Department of Biological Sciences, 601 Science Engineering, University of Arkansas, Fayetteville, Arkansas 72701
- Poster 12** **THE REPRODUCTIVE ECOLOGY OF THE WESTERN SLIMY SALAMANDER (*PLETHODON ALBAGULA*) FROM A MINE SHAFT IN THE OUACHITA NATIONAL FOREST, ARKANSAS**
Joseph R. Milanovich, Stanley E. Trauth, and David A. Saugey; Department of Biological Sciences, Arkansas State University, P.O. Box 599, State University, Arkansas 72467; ¹United States Forest Service, 8607 Highway 7 North, Jessieville, Arkansas, 71949
- Poster 13** **WATER QUALITY AND ECOSYSTEM FUNCTION ON UPPER AND LOWER REACHES OF TRIBUTARIES OF THE L'ANGUILLE RIVER, ARKANSAS**
Melissa Milligan and Richard S. Grippo. Department of Biological Sciences, Arkansas State University, State University, Arkansas 72467
- Poster 14** **AN INVESTIGATION OF CARBOHYDRATE MIMICKING PEPTIDES' CLUSTERING AND SECONDARY STRUCTURE PROPERTIES**
Jennifer Roller¹, Anastas Pashov², Jason Plaxco², Rinku Saha², Stewart Macleod², Thomas Kieber-Emmons². ¹Hendrix College, 1600 Washington Avenue, Conway, Arkansas 72032 and ²Arkansas Cancer Research Center and Department of Pathology, University of Arkansas for Medical Sciences, 4301 West Markham, Little Rock, Arkansas 72205
- Poster 15** **TESTING THE OXYGEN PARADOX WITH ANTIOXIDANT-DEFICIENT CYANOBACTERIA**
Christy L. Schuchardt, C. J. Spurlock, and David J. Thomas. Science Division, Lyon College, Batesville, Arkansas 72501.
- Poster 16** **CELLULAR SLIME MOLDS IN OZARK CAVES**
John C. Landolt, Michael E. Slay, and Steven L. Stephenson. Department of Biology, Shepherd University, P.O. Box 3210, Shepherdstown, West Virginia 25443. Arkansas Field Office, The Nature Conservancy, 601 North University Avenue, Little Rock, Arkansas 72205. Department of Biological Sciences, 601 Science Engineering, University of Arkansas, Fayetteville, Arkansas 72701.
- Poster 17** **NITRATE-REDUCING BACTERIA FROM CHILE'S ATACAMA DESERT (A POTENTIAL MARTIAN ANALOG).**
CaSandra J. Spurlock¹, Christy L. Schuchardt¹, Shawn M. Zimmerman¹, Christopher P. McKay², and David J. Thomas¹. ¹Science Division, Lyon College, Batesville, Arkansas 72501; ²Space Science Division, NASA Ames Research Center, Moffett Field, California 94035.
- Poster 18** **SODA BOTTLE WINOGRADSKY COLUMNS AS ASTROBIOLOGY EXPERIMENTS IN ELEMENTARY SCHOOL THROUGH COLLEGE.**
David J. Thomas¹ and Gayle Ross². ¹Science Division, Lyon College, Batesville, Arkansas 72501; ²Sulphur Rock Junior/Senior High School, Sulphur Rock, Arkansas 72579.
- Poster 19** **CROSS-SECTIONAL VARIATION IN THE FIBER-TYPE PROFILE OF THE BOTTLENOSE DOLPHIN (*TURSIOPS TRUNCATUS*) SCALENUS MUSCLE**
Brandon Thurow and Jennifer L. Dearolf, Biology Department, Hendrix College, Conway, Arkansas 72032
- Poster 20** **EVIDENCE FOR AN ALTERNATIVE SERINE RACEMASE TRANSCRIPT**
Deborly Wade, Central Baptist College, Conway, Arkansas 72034 and Steven W. Barger, Ph.D., University of Arkansas for Medical Sciences, 1501 W. Markham, Little Rock, Arkansas 72205
- Poster 21** **SYNTHESIS AND ANT-APOPTOTIC EFFECT OF CU-DISMUTASE MIMETIC IN CULTURED KIDNEY EPITHELIAL CELLS**
Grant W. Wangila¹, Kiran K. Nagothu², Richard Steward III¹, Renu Bhatt², John R. J. Sorenson², Sudhir V. Shah² and Didier Portilla². ¹University of Arkansas at Pine Bluff, 1200 University Drive, Pine Bluff, 71601. ²University of Arkansas for Medical Science Campus, 4301 West, Markham Street, Little Rock, Arkansas 72205.

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Poster 22 A FORGOTTEN CORPS OF ECOLOGICAL DISCOVERY: THE DUNBAR AND HUNTER EXPEDITION

Robert C. Weih, Jr.¹, Don C. Bragg², James T. Hartshorn¹, David W. Rowton¹. ¹Spatial Analysis Laboratory (SAL), University of Arkansas at Monticello, Arkansas Forest Resources Center, School of Forest Resources, 110 University Court, Monticello, Arkansas 71656, Email: weih@uamont.edu, Phone: 870-460-1248, Fax: 870-460-1092. ²USDA Forest Service, Southern Research Station, P.O. Box 3516 UAM, Monticello, Arkansas 71656

Poster 23 SPINAL CORD INJURIES STUDY-DESIGN OF A SMART IMPACTOR

Ronald Kelly, Antonius Hasan, Logan Hardin, Jim Yancey, and Shivan Haran, Assistant Professor, College of Engineering, Malathi Srivatsan, Assistant Professor, Biological Sciences, Arkansas State University, State University, Arkansas 72467